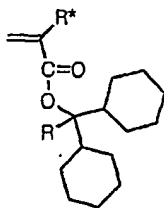


**WHAT IS CLAIMED IS:**

1. 1-Alkyl-1-dicyclohexyl (meth)acrylate represented by the following formula 1:

[Formula 1]



5            wherein R is a methyl or ethyl group, and R\* is a hydrogen or a methyl group.

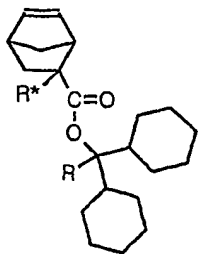
2. A process for the preparation of 1-alkyl-1-dicyclohexyl (meth)acrylate of formula 1 as described in claim 1, comprising the steps of:

              a) preparing 1-alkyl-1-dicyclohexyl alcohol by the reaction of dicyclohexyl  
10    ketone and an alkyl grinard reagent or alkyl lithium reagent; and

              b) reacting the 1-alkyl-1-dicyclohexyl alcohol prepared above with (meth)acryloyl chloride.

3. 2-Alkyl-2-dicyclohexyl-5-norbornene-2-carboxylate represented by the following formula 2:

15    [Formula 2]

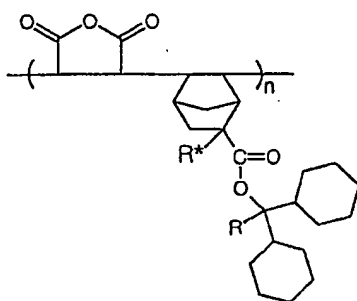


              wherein R is a methyl or ethyl group, and R is a hydrogen or a methyl

group.

4. A process for the preparation of 2-alkyl-2-dicyclohexyl-5-norbornene-2-carboxylate of formula 2 as described in claim 3, by the Diels-Alder reaction of 1-alkyl-1-dicyclohexyl (meth)acrylate of formula 1 as described in claim 1 and cyclopentadiene.
5. A photosensitive copolymer represented by the following formula 3:

[Formula 3]

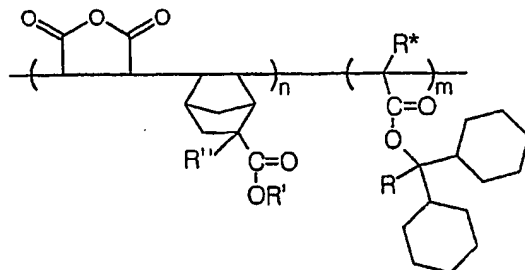


- wherein R is a methyl or ethyl, R\* is a hydrogen or a methyl, and n is an integer of 20 to 25.

6. A process for the preparation of the photosensitive copolymer of formula 3 as described in claim 5, comprising the step of polymerizing the compound of formula 2 as described in claim 3 with a maleic anhydride.

7. A photosensitive terpolymer represented by the following formula 4:

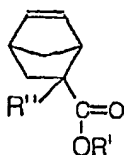
[Formula 4]



wherein R is a methyl or ethyl group; R\* is a hydrogen or a methyl group; R' is a hydrogen, an alkyl group, or a hydroxyalkyl group; R'' is a hydrogen or a methyl group; and m and n each satisfy the conditions  $m+n=1$ ,  $0.1<m<0.9$ , and  $0.1<n<0.9$ .

- 5 8. A process for the preparation of the photosensitive terpolymer of formula 4 as described in claim 7, comprising the step of polymerizing the compound of formula 1 as described in claim 1 with a maleic anhydride and a norbornene compound of the following formula 6:

[Formula 6]

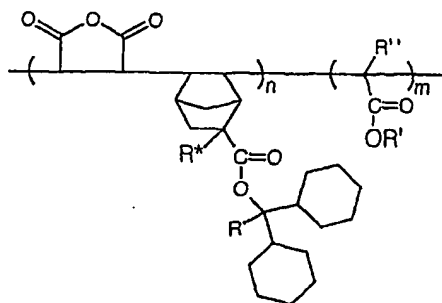


10

wherein R' is a hydrogen, an alkyl group, or a hydroxyalkyl group, and R'' is a hydrogen or a methyl group.

9. A photosensitive terpolymer represented by the following formula 5:

[Formula 5]



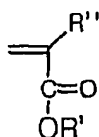
15

wherein R is a methyl or ethyl group; R\* is a hydrogen or a methyl group; R' is a hydrogen, an alkyl group, or a hydroxyalkyl group; R'' is a hydrogen or a methyl group; and m and n each satisfy the conditions  $m+n=1$ ,  $0.1<m<0.9$ , and  $0.1<n<0.9$ .

$$0.1 < n < 0.9.$$

10. A process for the preparation of the photosensitive terpolymer of formula 5 as described in claim 9, comprising the step of polymerizing the compound of formula 2 as described in claim 3 with a maleic anhydride and an acrylate
- 5 compound of the following formula 7:

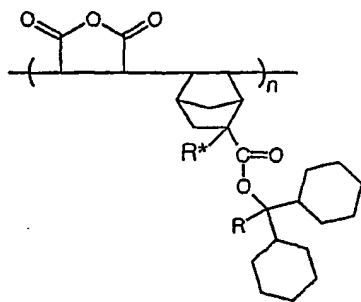
[Formula 7]



wherein R' is a hydrogen, an alkyl group, or a hydroxyalkyl group, and R'' is a hydrogen or a methyl group.

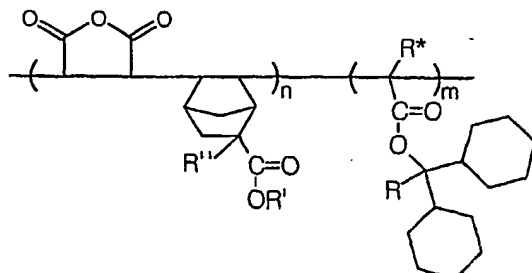
- 10 11. A chemically amplified positive photoresist composition for ArF comprising one or more polymers selected from the group consisting of the photosensitive copolymer of the following formula 3, the photosensitive terpolymer of the following formula 4, and the photosensitive terpolymer of the following formula 5:

[Formula 3]

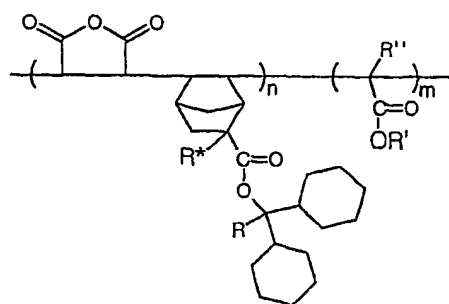


15

[Formula 4]



[Formula 5]



5            wherein R is a methyl or ethyl group; R\* is a hydrogen or a methyl group;  
 R' is a hydrogen, an alkyl group, or a hydroxyalkyl group; R'' is a hydrogen or a  
 methyl group; and m and n each satisfy the conditions  $m+n=1$ ,  $0.1 < m < 0.9$ , and  
 $0.1 < n < 0.9$ .

12. The positive photoresist composition according to claim 11, characterized in  
 10    that the content of said polymers is 1 to 30% by weight based on the total  
 composition.

13. The positive photoresist composition according to claim 11, characterized in  
 that said photoresist composition further comprises a photoacid generator in an  
 amount of 0.5 to 10% by weight of the total polymer.

15    14. The positive photoresist composition according to claim 13, characterized in  
 that said photoacid generator is selected from the group consisting of onium salts,

organic sulfonic acids, and a mixture thereof.

15. The positive photoresist composition according to claim 11, characterized in that said photoresist composition further comprises an organic base selected from the group of triethylamine, triisobutylamine, triisooctylamine, diethanolamine, triethanolamine, and a mixture thereof, in an amount of 0.01 to 2.00% by weight  
5 of the total polymer.

16. A semiconductor device prepared comprising the positive photoresist composition for ArF as described in claim 11.